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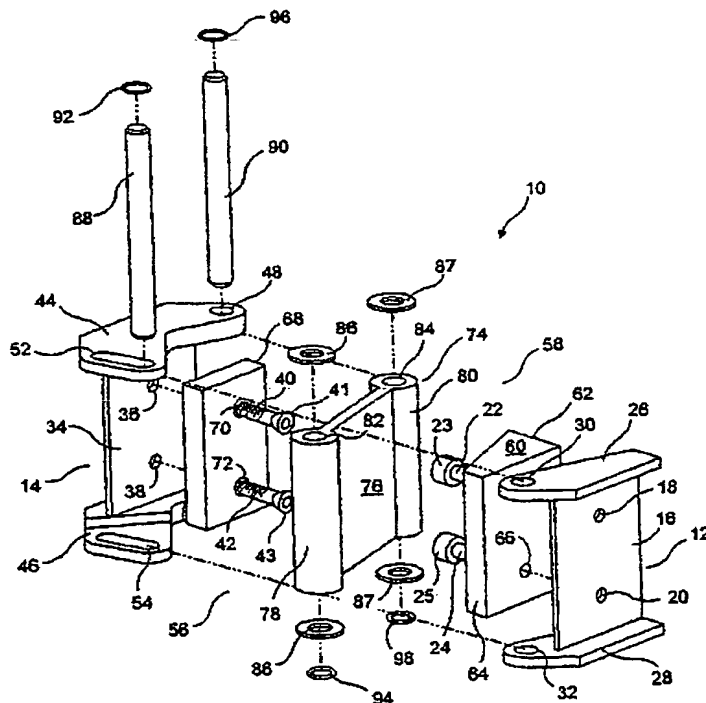
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(54) Title: ROTATIONAL-TRANSLATIONAL DOUBLE HINGE-ARM



(57) Abstract: The hinge includes a first flange and a second flange which pivot and translate with respect to each other. The first flange includes a first laterally offset pivot axis. The second flange includes a second laterally offset pivot axis and a translational path. Additionally, a pivot plate is provided with first and second parallel passageways. The first laterally offset pivot axis of the first flange engages the first parallel passageway of the pivot plate and the translational path of the second flange. The second laterally offset pivot axis of the second flange engages the second parallel passageway of the pivot plate. Initially relative pivoting of the first flange and the second flange causes the first laterally offset pivot axis of the first flange and the first parallel passageway of the pivot plate to translate within the translational path. Subsequent relative pivoting of the first flange and the second flange causes the pivoting about the first laterally offset pivot axis.

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ROTATIONAL-TRANSLATIONAL DOUBLE HINGE-ARMBACKGROUND OF THE INVENTIONField of the Invention

This invention relates to a rotational-translational double hinge-arm that can be operated linearly and can have various drive systems.

Description of the Prior Art

In the prior art, hinges for double arm assemblies are known. However, these designs have frequently had a high torque required to break the joint between the two arms (frequently configured as an idler or non-driven arm and a torque or driven arm). Additionally, the smoothness of operation has been a substantial concern, particularly in consumer applications, such as freezers. Similarly, the sealing line, the hinge life and the panel weight distribution have all been a substantial design considerations in this field.

Examples of hinges in this field are disclosed in U.S. Patent No. 5,355,558 entitled "Hinge Assembly", issued on October 18, 1994 to Vertanen; U.S. Patent No. 5,186,349 entitled "Hinge Mechanism", issued on February 16, 1993 to Sakamoto; U.S. Patent No. 4,839,941 entitled "Elevating and Traversing Hood Hinge", issued on June 20, 1989 to Orlando; U.S. Patent No. 3,251,089 entitled "Hinge Assembly", issued on May 17, 1966 to Ferguson; U.S. Patent No. 1,920,568 entitled "Cigar Box Hinge", issued on August 1, 1933 to Kling; and U.S. Patent No. 472,622 entitled "Hinge", issued on April 12, 1892 to Linkletter.

OBJECTS AND SUMMARY OF THE INVENTION

CLAIMSWhat is Claimed is:

1. A hinge for rotationally and translationally joining a first arm to a second arm, the hinge comprising:
 5. a first flange to be affixed to the first arm, said first flange including a first laterally offset pivot axis on a first side of the hinge;
 - a second flange to be affixed to the second arm, said second flange including a second offset pivot axis on a second side of the hinge and a
10 translational path on said first side of the hinge; and
 - a pivoting plate with a first end pivotally attached to said first laterally offset pivot axis and traveling within said translational path, and a
15 second end pivotally attached to said second laterally offset pivot axis.
2. The hinge of Claim 1 wherein said first laterally offset pivot axis comprises a first pair of offset colinear apertures for receiving a first rod.
3. The hinge of Claim 2 wherein said second laterally offset pivot axis comprises a second pair of offset colinear apertures for receiving a second rod.
4. The hinge of Claim 3 wherein said translational path comprises a pair of offset grooves.

5. The hinge of Claim 4 wherein said first flange comprises a first central plate separating a first pair of parallel plates, said first pair of offset colinear apertures being formed on respective parallel plates of said first pair.

6. The hinge of Claim 5 wherein said second flange comprises a second central plate separating a second pair of parallel plates, said second pair of offset colinear apertures being formed on respective parallel plates of said first pair, and said pair of offset grooves being formed on respective parallel plates of said second pair.

7. The hinge of Claim 6 wherein said pivoting plate includes a first passageway and a second passageway, said first passageway and said second passageway being parallel to each other and being formed along said first laterally offset pivot axis and said second laterally offset pivot axis, respectively, said first passageway receiving said first rod, and said second passageway receiving said second rod.

8. The hinge of Claim 9 wherein said first laterally offset pivot axis is at a first end of said translational path when the hinge is in a closed position, and said first laterally offset pivot axis translates to a second end of said translational path as the hinge moves from said closed position to a partially open position, and

wherein said second flange rotates about said first
laterally offset pivot axis at said second end of
10 said translational path as the hinge moves from said
partially open position to a fully open position.

9. The hinge of Claim 8 further including an
oblique block with a relatively narrower end on said
first side of the hinge and a relatively wider end
on said second side of the hinge, said oblique block
5 abutting said first central plate.

10. The hinge of Claim 9 wherein said pivoting
plate abuts an oblique face of said oblique block
when the hinge is in said open position.

11. The hinge of Claim 10 further including a
relatively orthogonal block abutting said second
central plate.

12. The hinge of Claim 11 wherein said pivoting
plate abuts said relatively orthogonal block when
the hinge is in said partially open position.

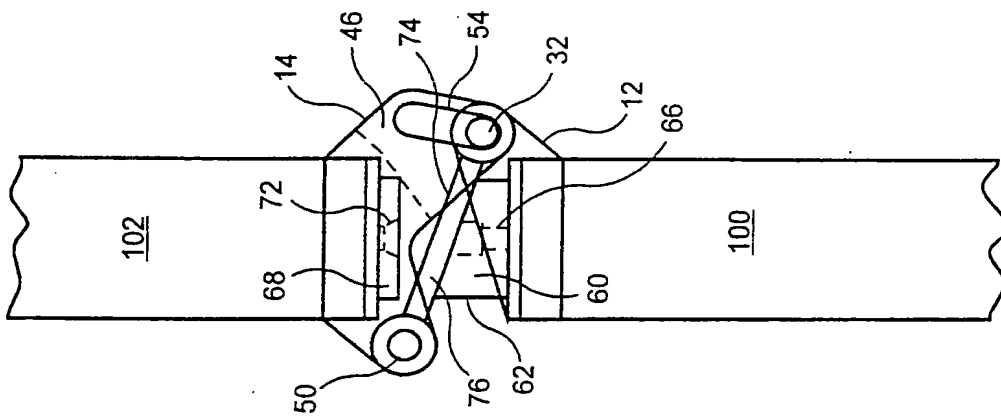


FIG. 2a

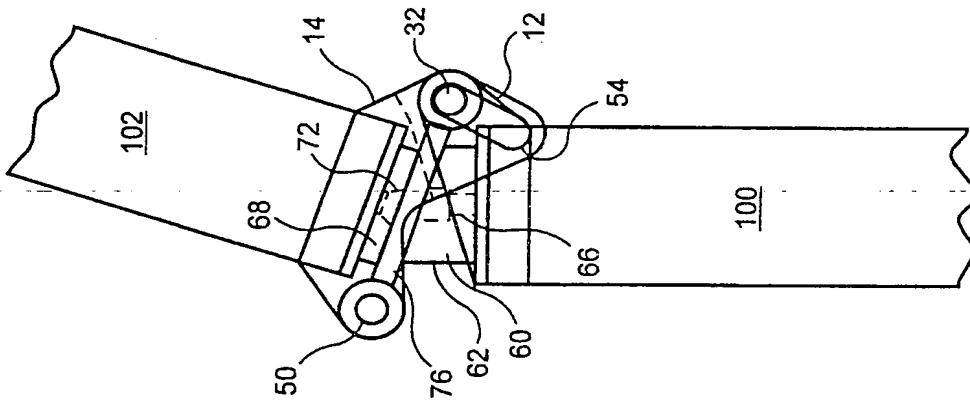


FIG. 2b

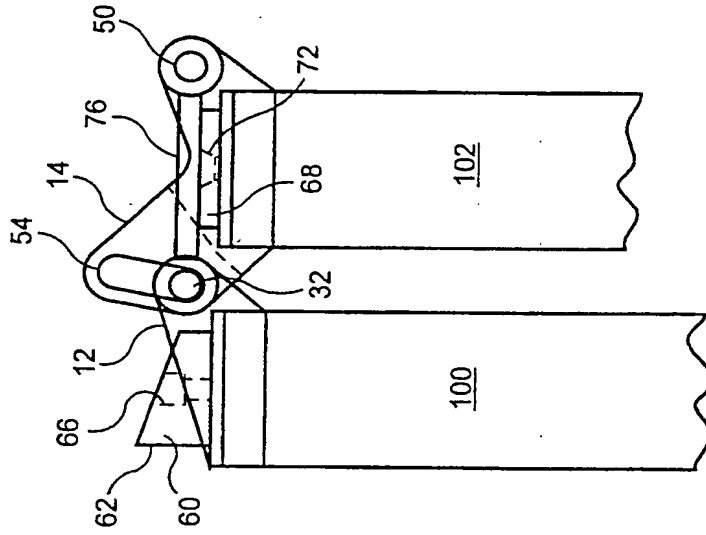


FIG. 2c